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Office of Environmental Management – Grand Junction

UMTRA Project

Moab UMTRA Project
Moab Site Fugitive Dust Control Plan

Revision 3

April 2021

U.S. Department of Energy

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Moab UMTRA Project Moab Site Fugitive Dust Control Plan

Revision 3

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4/19/2021

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Revision History

Revision	Date	Description
0	February 2013	Initial issue.
1	May 2017	Changed to a Project-wide document and updates made throughout.
2	August 2018	Updates reflecting Project progress.
3	April 2021	Updated to reflect changes in Project and to comply with Utah Division of Air Quality Fugitive Dust Control Plan document guidelines.

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Acronyms and Abbreviations

CA	Contamination Area
DOE	Department of Energy
EPA	Environmental Protection Agency
NWS	National Weather Service
RAC	Remedial Action Contractor
UAC	Utah Administrative Code
UMTRA	Uranium Mill Tailings Remedial Action

1.0 Introduction

1.1 Purpose

The purpose of the Moab Site Fugitive Dust Control Plan is to:

- Comply with Utah Administrative Code (UAC) Rule R307-205-8 (UAC R307-205-8), "Emission Standards: Fugitive Emissions and Fugitive Dust, Tailings Piles and Ponds," requiring owners or operators of an existing tailings operation to take steps to minimize fugitive dust resulting from grading, excavating, depositing, natural erosion, or other causes in association with such operation.
- Comply with Utah Administrative Code (UAC) Rule R307-205-4, "Emission Standards: Fugitive Emissions," and R307-205-5 "Emission Standards: Fugitive Dust," which applies to fugitive emissions from statewide sources.
- Describe the engineering and administrative controls used to minimize and control fugitive dust emissions from activities and operations conducted by the U.S. Department of Energy (DOE) Moab Uranium Mill Tailings Remedial Action (UMTRA) Project Moab site.

1.2 Scope

This document describes the controls used to minimize fugitive dust emission from operation activities and its implementation of controls as it relates to compliance of UAC R307-205-8. In addition, this document identifies the source of fugitive dust to better implement controls of this Plan.

1.3 Regulations

1. UAC R307-205, "Emission Standards: Fugitive Emissions and Fugitive Dust"
2. UAC R307-201, "Emission Standards: General Emission Standards"

1.4 Requirements

1. "Fugitive emissions from sources constructed or modified after April 25, 1971, shall not exceed 20 percent opacity."
2. "(9) Opacity Observation. Opacity observations of emissions from stationary sources shall be conducted in accordance with Environmental Protection Agency (EPA) Method 9. Opacity observers of mobile and intermittent sources shall use procedures similar to EPA Method 9, but the requirement for observations made at 15-second intervals over a 6-minute period shall not apply."

This Plan complies with Utah Administrative Code Rule R307-205-8, which requires owners or operators of an existing tailings operation to take steps to minimize fugitive dust resulting from grading, excavating, depositing, natural erosion, or other causes in association with such operation. Under Title 40 Code of Federal Regulations Part 81.345, Utah (40 CFR 81.345-Utah), "Protection of Environment, Designation of Areas for Air Quality Purposes-Utah," Grand County is classified as "attainment" or "unclassifiable" for $PM_{2.5}$ and PM_{10} and follows regulations applicable to attainment areas.

Even though the county has minimal restriction related to fugitive dust emissions, the site will strive to limit fugitive dust emissions as best as possible and follow best practices to keep emissions at or below 20 percent opacity as per applicable Utah Administration Codes.

This Plan describes the engineering and administrative controls used to minimize and control fugitive dust emissions from activities and operations conducted by the U.S. Department of Energy (DOE) Moab Uranium Mill Tailings Remedial Action (UMTRA) Project (Moab site). This site-specific Plan is updated as necessary to reflect dust controls for current and ongoing site activities and operations.

2.0 Site Description

The Moab site is a former uranium ore-processing facility located about 3 miles northwest of Moab in Grand County, Utah (see Figure 1). The Moab site currently encompasses 480 acres and consists of an approximately 130-acre uranium mill tailings pile, haul roads, the hillside and rail load-out areas, the Queue Support Area, a lidding structure, the north and east laydown areas, the Off-pile Area, Administrative Area, Well Field Revegetation Area, and the freshwater pond. This former mill site is located on the western bank of the Colorado River at the confluence with the Moab Wash.

The Moab site is bordered on the north, west, and southwest by steep sandstone cliffs. U.S. Highway 191 (US-191) parallels the northern site boundary, and State Route 279 (SR-279) transects the western portion of the property. The Colorado River forms the eastern boundary of the site. The Moab Wash runs northwest to southeast through the site and joins the Colorado River. Figure 2 shows the major features of the Moab site.

2.1 Project/Site Information

Name of operation, physical site address, and owner/operator contact information is provided below.

Name of Operation
Moab UMTRA Project: Moab site

Physical Address of Operation
2021 N. US-191, Moab, Grand County, Utah 84532

Owner
U.S. Department of Energy, Grand Junction office, 200 Grand Avenue, Suite 500
Grand Junction, Colorado 81501
DOE Federal Cleanup Director: (970) 257-2115

Operator
Remedial Action Contractor (RAC) North Wind Portage
2021 N. US-191
Moab, Utah 84532
Project Manager: Greg Church (970) 257-2117

Moab Operations/Site Manager: Ken Kisiel (435) 719-2805
On-call Manager (after hours):
(970) 361-8335

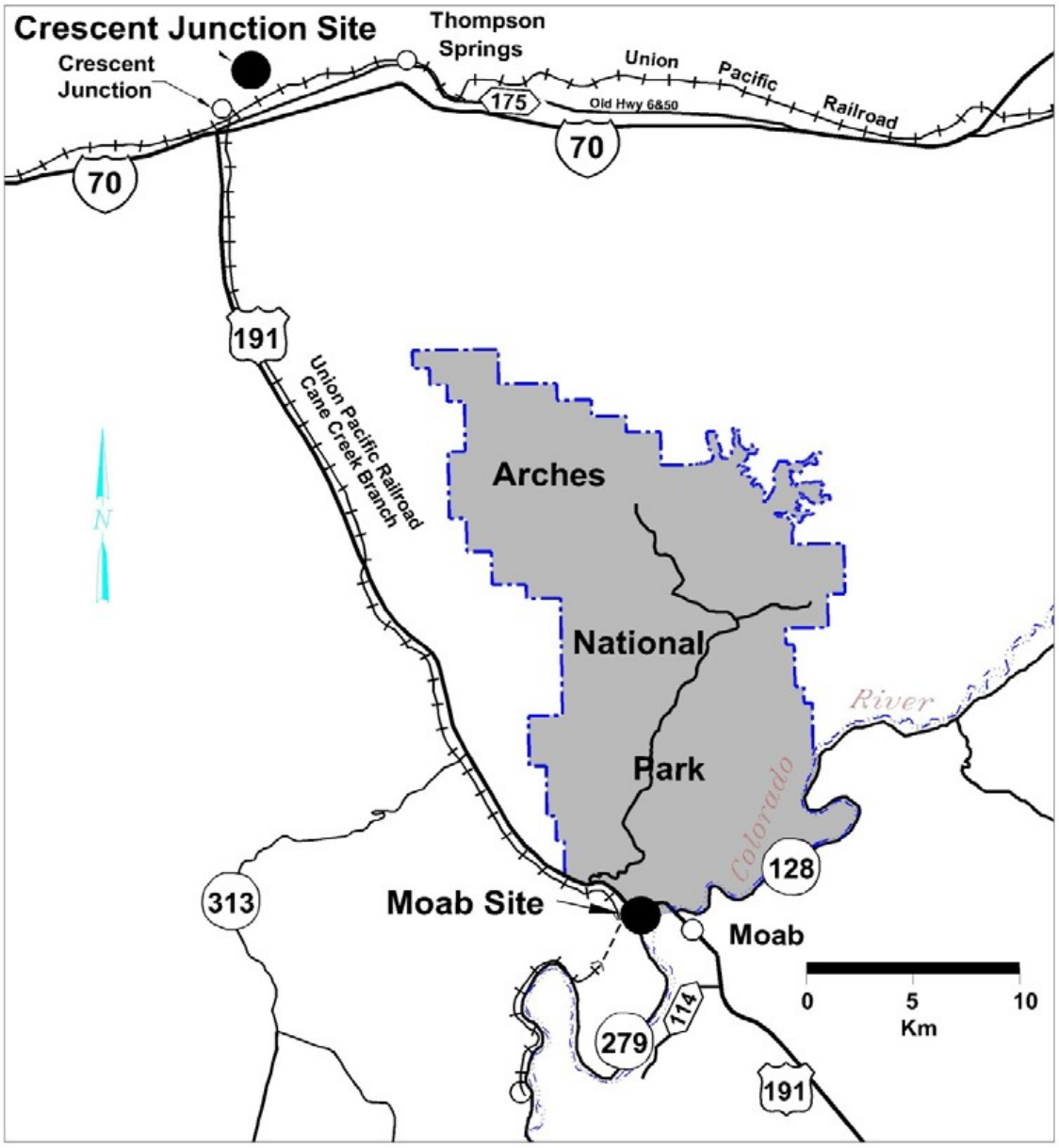

Figure 1. Location of Moab Site

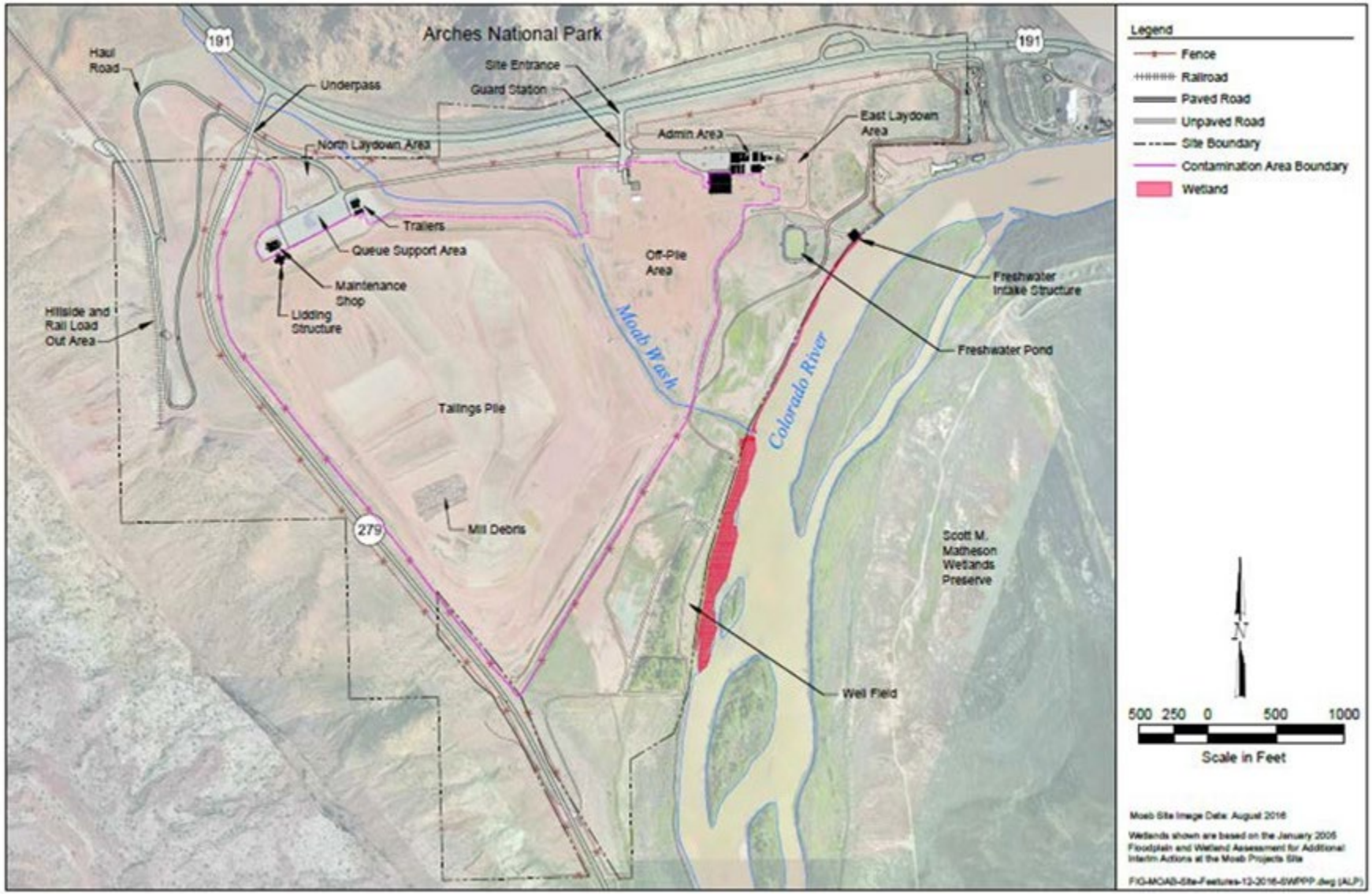

Figure 2. Moab Site Features

2.2 Meteorology and Climate

Two meteorological monitoring stations are located on the Moab site. Wind speed and direction data are used to determine when certain dust controls are initiated to keep opacity below 20%. Daily and weekly National Weather Service (NWS) weather forecasts are monitored daily to identify potential for dust generating weather to plan controls. Ongoing precipitation and soil moisture is also used to predict periods of greater risk.

The semi-arid desert climate of the Moab site is characterized by hot summers and mild to cold winters. The average annual temperature is approximately 58ºF. January is the coldest month of the year, with low temperatures averaging 29ºF. July is generally the warmest month of the year, the high temperatures averaging 87ºF. Relative humidity is low, averaging 26% during the summer months. During winter months relative humidity is higher with an average of 61%. The 14-year precipitation average for the Moab site is 7.45 inches per year. The average wind direction for the Moab site is generally from the west with stronger winds from the southeast. Wind speeds greater than 13 mph (speed at which loose soils/dust became airborne based on the Beaufort Wind Scale) are generally from east southeast.

3.0 Sources of Fugitive Dust

The materials of concern with respect to fugitive dust emissions at the Moab site are the uranium mill tailings and disturbed soils that are not stabilized. The majority of the mill tailings are contained within the on-site tailings pile, the footprint of which originally covered approximately 130 acres. The interim cover on the eastern and southern side slopes of the tailings pile primarily consists of sand and silt with low levels of radioactivity. The Well Field, located at the southern end of the site, is another area that has the potential for fugitive dust emissions that is undergoing revegetation and tree removal activities.

A description of the on-site activities and site conditions that may contribute to or generate fugitive dust emissions at the Moab site is provided below.

3.1 High-potential Source Areas and Activities

Certain portions of the Moab site are considered high-potential sources of fugitive dust emissions. These areas are characterized by loose, poorly consolidated soils and sediments; poor vegetative cover; or high levels of current or future/anticipated activity or disturbance. Areas of high-potential sources are:

- The mill tailings pile
- Contamination Area (CA) haul roads and access roads
- Off-pile

Activities that generate high levels of fugitive dust are:

- Excavation
- Conditioning
- Loading of tailings material into containers
- Driving on haul roads

Off-pile contaminated areas that have not been remediated has similar consistency to that of the tailings pile and are disturbed by haul truck traffic between Access Control and work areas on the tailings pile.

3.2 Moderate-potential Source Areas and Activities

Moderate-potential source areas are characterized by more stable soil conditions, typically with less levels of activity. These areas of the Moab site have varying degrees of vegetative cover. Areas of moderate-potential sources are:

- The Well Field remediation area
- North off-pile area
- The Moab Wash corridor
- Site access roads outside the CA

Activities that generate moderate levels of fugitive dust are:

- Driving on site access road outside the CA
- Revegetation activities such as mowing and brush clearing

3.3 Low-potential Source Areas and Activities

Due to the limited disturbances and a greater percentage of vegetative, rock, asphalt, or concrete cover, low-potential areas include:

- The hillside and rail load-out areas
- Steep slopes to the north, west, and southwest of the site; US-191 and SR-279 corridors; revegetated and stabilized areas north, east, and southeast of the Administrative Area
- The freshwater pond and intake structure
- The Well Field remediation area
- Site access roads outside the CA

Activities that generate moderate levels of fugitive dust are:

- Driving on site access roads outside the CA
- Revegetation activities such as soil preparation

4.0 Fugitive Dust Emission Controls

DOE is responsible for monitoring and controlling fugitive dust emissions from the Moab site until all contaminated soils are removed, and disturbed areas have been stabilize. The response actions described below help minimize and control dust emissions at the Moab site for high to moderate source areas and activities. No dust controls are in place or planned for the low-potential source/activity area.

4.1 Watering Stabilization

Application of water by water trucks is the main dust control measure used throughout the Moab site. Both contaminated groundwater inside the CA and fresh water outside the CA are successfully used as the primary dust control agents. The use of water has an added benefit of preventing dust from forming by developing a crust on the soil surface. Once a crust is formed, the area is minimally disturbed until it needs to be worked, such as the face of the pile. Water is applied to CA haul roads/access road and the drying beds when needed.

4.2 Early Startup Dust Suppression

During summer months, when conditions are highest for fugitive dust, water is applied to work areas before the start of operations. Early startup dust suppression aids in reducing fugitive dust throughout the day, making dust most controllable. This also applies to areas outside of the CA.

4.3 Vegetative Covers

Various areas around the Moab site have vegetative covers to aid in controlling fugitive dust. These vegetative covers help to reduce soil erosion and promote soil stabilization via plant root systems. Native plants are especially important for vegetative covers because the plants are better suited to keep soils stabilized. Invasive species are less desirable do to their poor capability of holding soils together.

4.4 Synthetic Covers

To help stabilize disturbed soils on the Moab site, erosion-control matting has been placed along the Moab Wash corridor, on portions of the hillside area above and below the rail bench, and in areas north and east of the Administrative Area. Asphalt was placed on the Queue Support Area, employee parking lots, uphill and downhill haul roads, and the rail load-out area to reduce dust and encourage vegetation growth.

4.5 Traffic Speed

Traffic speed is restricted to an appropriate level on all designated roads. This helps limit the generation of fugitive dust.

4.6 Conditioning Bed Orientation

The conditioning beds are positioned to maximize dust suppression from water application, and is capped with higher moisture content clays.

4.7 Excavator Dump Height

While containers are being loaded, operators keep the bucket dump height low, as close to the container as possible to minimize tailings on the outside of the container. The lower dump height also aids in reducing fugitive dust when loading the containers by reducing the amount time dirt falls through the air.

4.8 Dust Suppression Meetings

Dust suppression meetings are held quarterly to review current dust-suppression efforts and adequacy while trying to improve methods of reducing fugitive dust.

4.9 Off-Hours Dust Control

This Plan is in effect during all hours of operation at the Moab site. During non-business hours, there are no dust-generating activities. However, if high winds are measured at the on-site meteorological station, site personnel evaluate vulnerable areas and implement controls as appropriate to reduce off-hours emissions.

5.0 Opacity

The Moab site performs opacity observations to maintain compliance with UAC R307-0205. Due to the site's intermittent emissions, UAC R307-201-3(9) is applicable; therefore, the site has adopted a method to monitor opacity that is site-specific using EPA Method 9 and Method 22 techniques. Only EPA Method 9-trained personnel conduct opacity observations. Observations are made at the site boundary and are recorded on the Project's Fugitive Dust and Opacity Observation Form 1109. All completed forms are sent to records.

6.0 References

40 CFR 60 (Code of Federal Regulations) Appendix A-4, "EPA Reference Method 9, "Visual determination of the opacity of emissions from stationary sources."

40 CFR 81.345-Utah (Code of Federal Regulations), "Protection of Environment, Designation of Areas for Air Quality Purposes.

UAC R307-201 (Utah Administrative Code), "Emission Standards: General Emissions Standards

UAC R307-201-3 (Utah Administrative Code), "Emission Standards: General Emissions Standards: Visible Emissions Standard

UAC R307-205 (Utah Administrative Code), "Emission Standards: Fugitive Emissions and Fugitive Dust"

UAC R307-205-8 (Utah Administrative Code), "Emission Standards; Fugitive Emissions and Fugitive Dust; Tailings Piles and Ponds."